ENVIRON

August 20, 2010

Mr. Aaron Reilly
Project Manager
Riis Borg
1010 North Hooker Street, Suite 200
Chicago, IL 60642

Re: Radiation Screening, Soil Boring at Grand Avenue and Michigan Avenue in Chicago, Illinois

Dear Mr. Reilly:

ENVIRON International Corporation (ENVIRON) conducted a radiation screening at the canopy walkway located at 158-160 East Grand Avenue in Chicago, IL (Site). It is our understanding that the Site is preparing for a renovation of the canopy walkway that necessitates creating penetrations in the pavement to install footings for the walkway. As such, the conductance of this radiological screening was conducted to determine if specific areas within the renovation area exhibited elevated gamma radiation, if any. This letter report outlines the screening activities that were conducted on July 13-15, 2010 where soil borings were made along the street and sidewalk below the canopy.

BACKGROUND

An initial assessment was conducted on July 13, 2010 in order to establish a background level of radiation due to potential existence of residual thorium at the Site. This initial assessment primarily focused on surveying the area to obtain background levels of radiation on the pavement from the sidewalk and street.

METHODOLOGY AND SCOPE

In general, the following activities were conducted at the Site:

- ENVIRON screened the immediate area under the canopy walkway to establish background radiation levels.
- ENVIRON screened the soil removed from the three identified boreholes to determine the level of residual gamma radiation. Soil screening was conducted on samples removed from the boreholes in approximately 1.5 foot lifts using 2 inch diameter samplers to a depth of approximately 70 to 90 feet.
- This screening was conducted using a Ludlum Model 3 survey meter and a gamma scintillation detector (Model 44-2).

RESULTS and DISCUSSION

The objective of the screening was to obtain the level of radiation due to the potential existence of residual thorium. This screening focused on those areas where the three identified boreholes would be made in the pavement adjacent to the canopy walkway

According to the United States Environmental Protection Agency (USEPA) regulations (i.e., 40 CFR 192.12(b)(2)), the dose equivalent rate in the work area should not exceed 20 micro-Roentgen per hour (μR/Hr) (or 18,000 CPM) over the background dose equivalent rate.

CONCLUSIONS

Table 1 presents the results in counts per minute (CPM) for the gamma radiation survey in a tabular format. It was established that in general, the level of gamma radiation in the outdoor environment surrounding the Site (e.g., concrete sidewalk and paved street) ranged between 4600 to 8000 CPM. As shown in Table 1, borehole location B1 exhibited gamma radiation levels from 2000-7300 CPM, borehole location B2 exhibited gamma radiation levels from 3400-7000 CPM, and borehole location B3 exhibited gamma radiation levels from 5400-8000 CPM. The soil from all three locations exhibited gamma radiation levels at or below background levels, and well below the USEPA standard of 18,000 CPM over background.

RECOMMENDATIONS

Based on the favorable screening for the three identified boreholes, it is unlikely that the results will significantly vary as the boreholes are expanded in order to install the footers. However, given that the material excavated from the footer locations will be disposed off site, Riis Borg should consider conducting additional radiation screenings as the actual footings are excavated to ensure that similar results are obtained.

If you have any questions or concerns, please do not hesitate to contact me at (312) 288-3866.

Sincerely,

ENVIRON International Corporation

Nita J. Shinn
Senior Associate

Attachment

TABLE

Table 1: Gamma radiation screening results
158-160 East Grand Ave, Chicago, IL
Canopy Walkway
July 13, 2010 to July 15, 2010

Area	Location	Average Reading (CPM)
Background	Side Walk	7471
East	Street	7112
Background	Side Walk	7559
Approx. 12 feet from East	Street	7490
Background	Side Walk	6309
Approx. 24 feet from East	Street	6497
Background	Side Walk	7930
Approx. 36 feet from East	Street	6791
Background	Side Walk	7263
At boring B3	Street	6971
Background	Side Walk	7420
East side loading dock/ parking entry	Street	6741
Background	Side Walk	7554
Mid-east side loading dock/ parking entry	Street	6791
Background	Side Walk	6723
Mid-west side loading dock/ parking entry	Street	6200
Background	Side Walk	5407
West side loading dock/ parking entry	Street	4671
Background	Side Walk	6179
At boring B2	Street	4976
Background	Side Walk	6603
Approx. 20 feet west of B2	Street	4890
Background	Side Walk	6527
Approx. 30 feet west B2	Street	4584
Background	Side Walk	6979
Approx. 40 feet west of B2	Street	5711
Background	Side Walk	6979
At sidewalk expansion	Street	6255
Background	Side Walk	6545
At boring B1	Street	6736
Background	Side Walk	5869
Approx. 10 feet west of B1	Street	5772
Background	Side Walk	5471
At bottom of stairs to Michigan Avenue	Street	5341

Table 1: Gamma radiation screening results
158-160 East Grand Ave, Chicago, IL
Canopy Walkway
July 13, 2010 to July 15, 2010

Area	Location	Average Reading (CPM)
Boring B1 soil	1-2.5 feet	5321
	2.5-4 feet	5804-6375
	5-6.5 feet	2000-5500
	7.5-9 feet	5300-6200
	10-11.5 feet	5200-6700
	Soil augered onto pavement	3000-5000
	15-16.5 feet	5400-6100
	20-21.5 feet	5300-6400
	25-26.5 feet	6000-6800
	30-31.5 feet	5500-6300
	35-36.5 feet	5700-6100
	40-41.5 feet	5700-6200
	45-46.5 feet	No sample in sampler
	50-51.5 feet	6400-6800
	55-56.5 feet	5500-6200
	60-61.5 feet	6000-6500
	65-66.5 feet	6200-7300
	70-71.5 feet	6000-6300
	Sludge around borehole	5000-6300
Boring B2 soil	Breakthrough-1.5 feet	3400-4300
	1.5-3 feet	5400-6300
	3-4.5 feet	4500-5900
	5-7 feet	5000-5900
	7.5-9 feet	4800-6000
	10-11.5 feet	4700-5700
	15-17 feet	4800-6300
	20-22 feet	5200-7000
	25-27 feet	5100-6000
	30-32 feet	5200-6900
	35-37 feet	5600-6200
	40-42 feet	5400-6200
	45-47 feet	4800-6500
	50-52 feet	5000-6400
	55-57 feet	5300-5700
	60-62 feet	5200-6800
	65-66.5 feet	5600-6200
	Sludge around borehole	5000-6300
	70-71.5 feet	5600-6800
	75-76.5 feet	5400-6000

Table 1: Gamma radiation screening results
158-160 East Grand Ave, Chicago, IL
Canopy Walkway
July 13, 2010 to July 15, 2010

Area	Location	Average Reading (CPM)
Boring B3 soil	1-2.5 feet	5400-6300
	Augered pavement	5400-5600
	2.5-4 feet	7000-7200
	5-6.5 feet	6000-6700
	Soil augered onto pavement	6100-6400
	7.5-9 feet	6000-7200
	10-11.5 feet	6500-6800
	15-16.5 feet	6800-7300
	20-21.5 feet	6200-7500
	25-26.5 feet	5900-7600
	30-31.5 feet	6900-7600
	35-36.5 feet	6000-7600
	40-41.5 feet	6500-7500
	45-46.5 feet	6600-7700
	50-51.5 feet	6400-7500
	55-56.5 feet	6400-7900
	60-61.5 feet	6900-7700
	65-66.5 feet	6900-7800
	70-71.5 feet	6600-7100
	75-76.5 feet	6500-7500
	80-81.5 feet	6500-8000
	85-86.5 feet	6600-7300
	90-91.5 feet	6200-7500
	Sludge around borehole	5900-7000

Key:

CPM: Counts per minute

- Background sidewalk screening at support columns and approximately halfway between columns
- Background street screening approximately 5 feet away from sidewalk